TRC
Environmental Solutions through Technology

TRC Environmental Corporation
Boott Mills South, Foot of John Street
Lowell, MA 01852
☎ (508) 970-5600

September 22, 1992

NAME: Olin Corp
I.D. NO.: CTD001451004
FILE LOC: R-5 PA+
OTHER:

Mr. Doug Zimmerman
State of Connecticut
Department of Environmental Protection
Site Remediation and Closure Division
165 Capitol Avenue
Hartford, CT 06106

Subject: Final PA Plus
Olin Corporation
New Haven, CT
W.A. No. 10-IJZZ
Ref. No. 1-636-011-0-IJ59
TDD No. 9108-129-ATE
CERCLIS No. CTD001451004

Dear Mr. Zimmerman:

Two copies of the Final PA Plus Report for Olin Corporation in New Haven, Connecticut are enclosed. This final report has been revised in accordance with comments received from the EPA and the State.

If you have any questions, please do not hesitate to call.

Sincerely,

Paul A. Hughes
ARCS Program Manager

Enclosure

cc: J. Anderson (w/o enclosure)
S. Hayes (w/o enclosure)
E. Waterman (w/o enclosure)

SEMS Doc ID 657166

ch490BL

TRC
Environmental Solutions through Technology

TRC Environmental Corporation
Boott Mills South, Foot of John Street
Lowell, MA 01852
☎ (508) 970-5600

MAC

September 22, 1992

Ms. Sharon Hayes
Superfund Support Section (HSS-CAN7)
U.S. EPA Waste Management Division
JFK Federal Building
Boston, MA 02203

NAME: Olin Corp
I.D. NO.: CTD001451004
FILE LOC: R-5 PAT
OTHER: _____

Subject: Final PA Plus
Olin Corporation
New Haven, CT
W.A. No. 10-IJZZ
Ref. No. 1-636-011-0-IJ59
TDD No. 9108-129-ATE
CERCLIS No. CTD001451004

Dear Ms. Hayes:

Enclosed is a copy of the Final PA Plus Package for Olin Corporation in New Haven, CT. Copies of the report have been sent to the state contact under separate cover. Draft report comments submitted by the EPA and the State have been incorporated.

This report was prepared in response to Contract No. 68-W9-0033, Work Assignment 10-IJZZ. An Acknowledgement of Completion will follow shortly documenting the completion of work for this site.

If you have any questions, please do not hesitate to call.

Sincerely,

Paul A. Hughes
ARCS Program Manager

Enclosure
cc: J. Anderson
E. Waterman

489BL

ARCS

Remedial Planning Activities at Selected Uncontrolled Hazardous Substance Disposal Sites in Region I

Environmental Protection Agency
Region I

ARCS Work Assignment No. 10-1JZZ

NAME: Olin Corp
I.D. NO.: CTD001451004
FILE LOC: R-5 PA+
OTHER: _____

Olin Corporation
New Haven, CT
CTD 001451004
TDD# 9108-129-ATE

Preliminary Assessment-Plus
Final Report

September 1992

TRC Companies, Inc.

TAMS Consultants, Inc.
PEI Associates, Inc.
Jordan Communications, Inc.

PRELIMINARY ASSESSMENT - PLUS
OLIN CORPORATION
NEW HAVEN, CONNECTICUT

CTD001451004

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region I
90 Canal Street
Boston, Massachusetts 02203-2211

Work Assignment No.:	10-1JZZ
EPA Region:	I
Contract No.:	68-W9-0033 (ARCS)
TRCC Document No.:	A92-786
TRCC Project No.:	1-636-011-0-1J59
TDD Number:	9108-129-ATE
TRCC Work Assignment Manager:	Michael Asselin
TRCC Task Manager:	Susan Zarlengo
Telephone No.:	(508) 970-5600
EPA Work Assignment Manager:	Sharon Hayes
Telephone No.:	(617) 573-5709
Date Prepared:	September 22, 1992
Revision:	0

TRC COMPANIES, INC.
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
(508) 970-5600

TABLE OF CONTENTS

TABLES

FIGURES

INTRODUCTION

The TRC Companies, Inc. (TRCC) Alternative Remedial Contract Strategy (ARCS/Region I) team was requested by the Region I U.S. Environmental Protection Agency (EPA) Waste Management Division to perform a Preliminary Assessment Plus (PA-PLUS) of Olin Corporation in New Haven, Connecticut. Tasks were conducted in accordance with the ARCS contract, the PA-PLUS Scope of Work and Technical Specification provided by the EPA under Work Assignment No. 10-1JZZ which was issued to the ARCS/Region I TRCC contract on August 27, 1991. This PA-PLUS report was completed as part of EPA's Environmental Priorities Initiative (EPI), a joint project overseen by the Resource Conservation and Recovery Act (RCRA) program and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) program, more commonly known as Superfund.

Background information used in the generation of this report was obtained through file searches conducted at the Connecticut Department of Environmental Protection (CTDEP) and EPA, telephone interviews with town officials and individuals knowledgeable of the property history and characteristics, and conversations with other Federal, State and local agencies. Information was also collected during the ARCS/Region I on-site reconnaissance which was conducted on May 22, 1992.

This package follows the guidelines developed under Superfund. However, these documents do not necessarily fulfill the requirements of other EPA regulations such as those under RCRA or other Federal, State or local regulations. The PA-PLUS provides a preliminary screening of facility operations. The EPI represents an integrated RCRA/CERCLA approach to assessing RCRA facilities utilizing procedures that combine elements of the Superfund Preliminary Assessment (PA) and the RCRA Facility Assessment (RFA). Under the EPI, current and former hazardous waste treatment, storage and disposal facilities regulated by the RCRA program are being evaluated to determine whether corrective action may be warranted. The PA-PLUS is a limited effort and is not intended to supersede more detailed investigations.

SITE DESCRIPTION

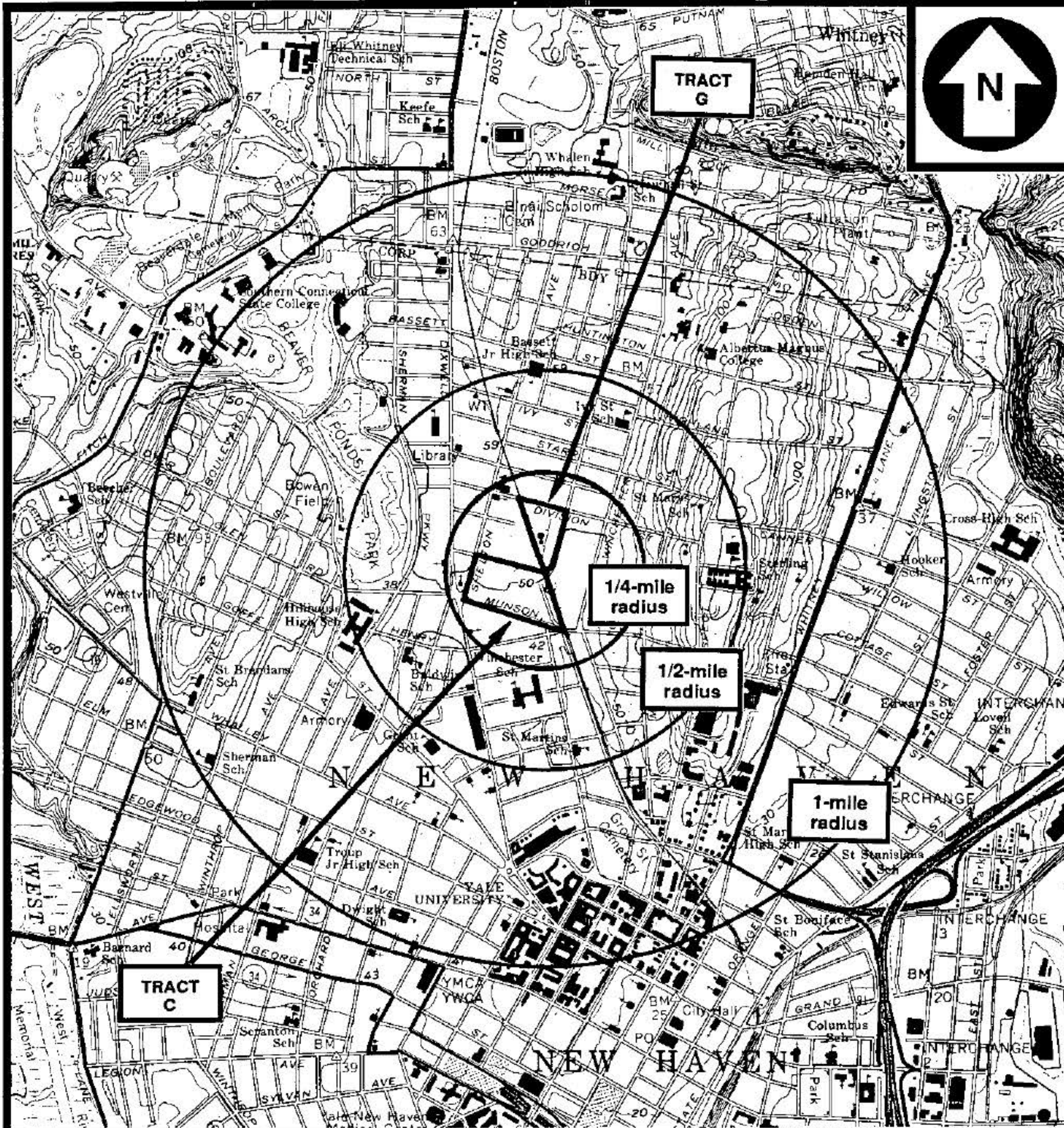
Olin Corporation (Olin) is located at 24 Science Park in New Haven County, New Haven, Connecticut. The point of access to the property is located at approximately 41°19′25″ north latitude and 72°55′51″ west longitude (see Figure 1) (USGS, 1984).

Olin Corporation is located in Science Park, a large industrial park in New Haven, Connecticut. The park is divided into "tracts" of land which are owned and operated by different companies not known by TRCC.

Olin has operated a chemical research and development facility at Tract C since 1950. In 1984, Olin scaled down operations in New Haven considerably when a major portion of the operations moved to Cheshire, Connecticut (TRCC, 1992a,b). Since many processes have been developed on site and sold, it is difficult to define every operation that has occurred. Research and development activities have centered around flame retardants, urethane chemical manufacturing and water treatment specialty products (Olin, 1988).

Tract C is approximately 500,000 square feet. Approximately 75% of the site is occupied by buildings. The overall topography of the site is flat and approximately 50% of the area is paved (see Figure 2). There are eighteen structures on site. Currently, the three major operations occurring on site include research and development of: toners for copiers, rigid/inflexible foams for automobile dashboard molds, and chemicals for swimming pools (TRCC, 1992a,b).

Building 118 (Tract C) is approximately 50 feet by 150 feet. This building is two stories high in the east and west bays and 3 stories high in the middle bay. There is a baghouse (AOC #17) located outside of the building at the east bay which collects "toner fines" (non-hazardous dust) from the processes occurring in the building. This dust is collected in drums and shipped off-site for disposal. The bottom floor of the east and west bays are concrete and have no floor drains.



BASE MAP IS A PORTION OF THE FOLLOWING 7.5' U.S.G.S. QUADRANGLE:
NEW HAVEN, CT, 1967; PHOTOREVISED, 1984

0 1000 2000 3000 feet

CONN

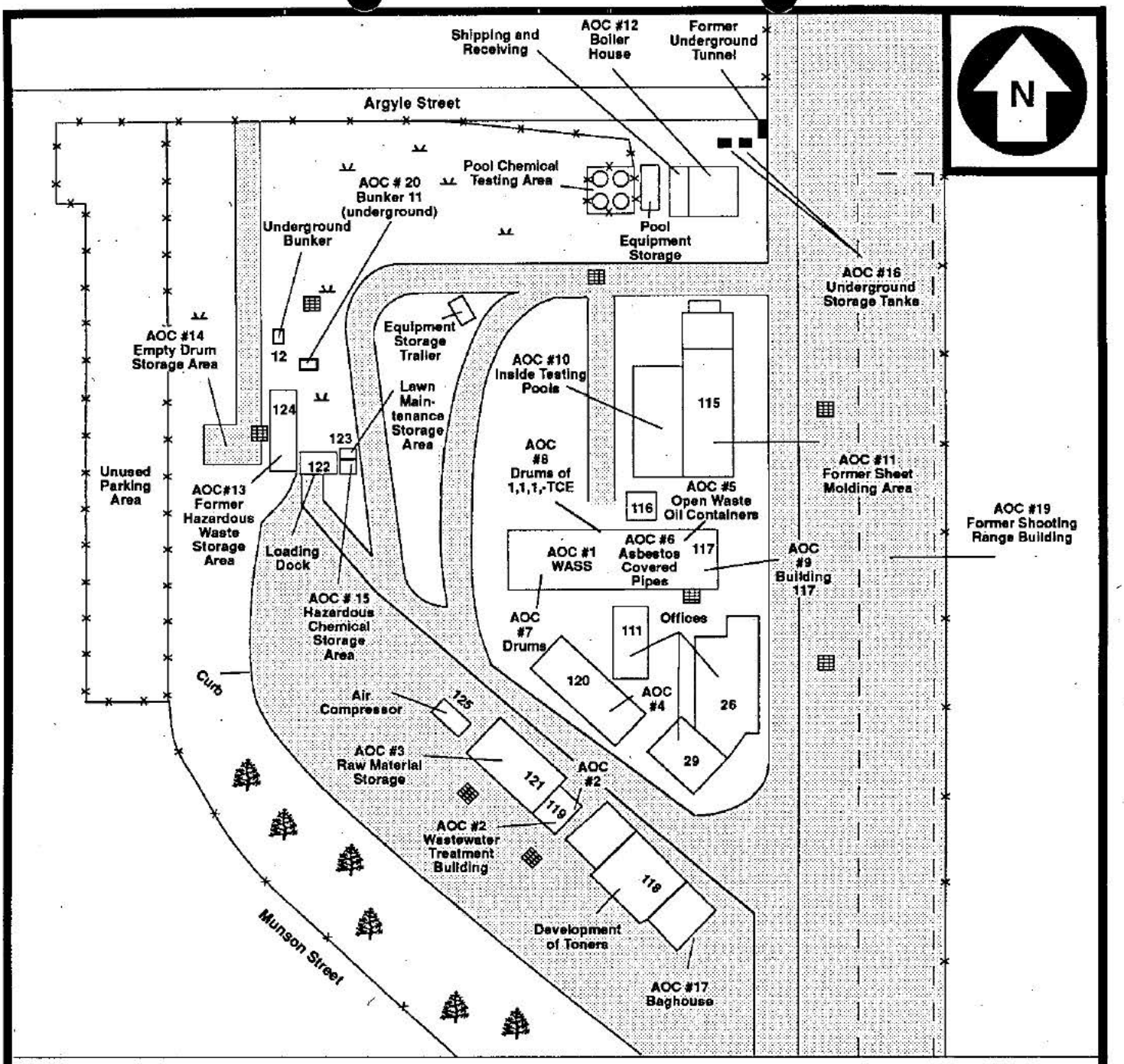
QUADRANGLE LOCATION

LOCATION MAP

OLIN CORPORATION
NEW HAVEN, CONNECTICUT

TRC Companies, Inc.

Figure 1.



Note: Property boundary is outside of the site figure.

Not to Scale

Fence
Gate
Grass
Woodlands
Catch Basin
Paved Area
124 Building/Number

SITE SKETCH

OLIN CORPORATION—TRACT C
NEW HAVEN, CONNECTICUT

TRC Companies, Inc.

Figure 2.

A92-766/B

A contained trench is located in the floor of the middle bay. The second and third story floors are metals grates, except for the middle bay on the southern side of the second story floor which is concrete. This floor has a drain connected to the sanitary sewer. This area was a laboratory prior to 1989 (TRCC, 1992a,b).

Building 117 (Tract C) (AOC #9) is a metal building approximately 50 feet by 215 feet. Drains in the concrete floor and sinks are scattered throughout the building. This building contains spray booths used to paint dashboards, ovens used to heat materials, foam blending machines, a weatherometer (accelerates weather's affects on material), several waste accumulation areas (AOC #1), drums tipped on their side resting on wooden supports and drums/containers stored in various areas. Asbestos covered pipes (AOC #6) are visible along the northern wall. Uncovered pails (AOC #5) containing oil/grease were observed behind a machine used in the production of foam dashboards. These pails were placed here to recover any oil/grease which leaked out of the machine during routine maintenance. Raw materials and wastes are stored in drums (AOC #7, AOC #8) randomly on the first floor of Building 117. A 55-gallon drum labelled "freon" was located next to the stairs leading down to the analytical laboratory (TRCC, 1992a,b).

Inside the southwestern part of the Building 115 (Tract C) (AOC #10), two 5,000 gallon above-ground swimming pools resting on clay material surrounded by a small steel berm are used to test pool chemicals. The floor in this room is concrete. No floor drains were apparent. The floor was wet east of each pool with what appeared to be pool water. Wastes stored in this area included acid and hydrogen peroxide. Located in the southeastern portion of this building is a small room with a concrete floor where the sheet molding of hard plastics occurred (AOC #11). The remainder of this building consists of vacant analytical and testing laboratories. The entire building is approximately 40 feet by 130 feet (TRCC, 1992a,b).

Building 119 (Tract C) (AOC #2) is the wastewater treatment area which is approximately 42 feet by 60 feet. Building 120 (Tract C), (AOC #4), is approximately 50 feet by 120 feet and was empty at the time of the site reconnaissance. This building is the former printed wire board operation location. Floor trenches with grates in Building 120 directed the waste rinse

waters into a sump. Wastewater collected in the sump was then pumped through pipes located above the roadway into Building 119 for treatment.

The concrete floors in Building 120 appeared to have been painted recently. Building 119 has a concrete floor and two sealed drains which are pumped out periodically (TRCC, 1992b).

Building 121 (Tract C) (AOC #3) is the raw material storage area. Approximately 250 drums were stored in this area (approximately 42 feet by 75 feet in size). About 40 drums had secondary containment in the form of spill pallets. The floor is concrete with a gentle slope to the center. Staining on the floor was evident. During the site reconnaissance, a small spill of a yellow resin was discovered. A 3-inch concrete berm surrounds the vented building (TRCC, 1992a,b).

Building 123 (Tract C) (AOC #15) is a small storage shed divided into two sections by a concrete wall. The northern section of the building serves as a lawn supply and maintenance storage area (TRCC, 1992a,b). The southern section of the building serves as storage for waste and raw materials collected from satellite accumulation areas (TRCC, 1992a,b).

Building 124 (Tract C) (AOC 13) is the former hazardous waste storage area which was empty at the time of the site reconnaissance. The building is approximately 40 feet by 100 feet. The floor is concrete and a trench with a grate runs down the center of it. The trench runs along the length of the building. The trench was contained and was pumped out if necessary. Material pumped out was put in drums and disposed of offsite.

To the west of this building is a storage area (AOC #14) for empty plastic and steel drums that are being shipped off site to either be shredded (plastic) or reclaimed (steel). Mr. Dreyfuss, facility manager of Olin, told TRCC personnel that these drums have not been cleaned. Approximately 200 drums are stacked on their side on the ground and 30 are standing upright on wooden pallets. Located between the drums and the building is a catch basin which is connected to the storm sewer (TRCC, 1992a,b).

Buildings 11 (AOC #20) and 12 (Tract C) are underground bunkers. Bunker 12 was never used and bunker 11 was used to store reactive materials. They were built below ground with a concrete floor, cinder block walls and a wooden roof (TRCC, 1992a,b).

On the northern portion of the site (Tract C), bordered by Argyle Street, are four fenced-in swimming pools used for testing pool chemicals. This operation will be moving to the Cheshire, CT facility by September 1992. East of the swimming pools is an equipment shed and a boiler house. The approximately 25 foot by 60 foot boiler house (AOC #12), containing two boilers and a 55-gallon drum labelled caustic material, has a concrete floor, a sink and a floor drain, which connect into the East Shore Water Pollution Control Plant. Two 10,000-gallon underground storage tanks (AOC #16) used to store #4 fuel oil are located north of the boiler house. The gravel surrounding the tank above-ground nozzle was stained as well as the sidewalk north of the tanks (TRCC, 1992a,b). There is no secondary containment present for these tanks (Olin, 1992a).

Building 122 (Tract C) is a loading dock with two sides and a roof all constructed of metal.

Building 125 (Tract C) is a small compressor room.

Buildings 26, 29 and 111 (Tract C) are office buildings and Building 116 is used to store snowblowers (TRCC, 1992a,b).

Tract C is bordered to the south by Munson Street, to the north by Argyle Street and to the east by Science Park. A wooded area is located to the west. The area is highly residential with many multiple family dwellings (TRCC, 1992a,b).

Catch basins on site are connected to the city of New Haven Storm Sewer System which discharge into Beaver Park Lagoon. All floor drains and sinks found in the buildings are connected to the sanitary sewer system which flows to the East Shore Water Pollution Control Plant where it is treated prior to discharge into the New Haven Harbor (Michalak, 1992a).

Access to the site is restricted by a 10 foot high chain link perimeter fence and two guard booths, one located at each end of Winchester Avenue (see Figure 3). These booths are manned 24 hours a day. Periodic security checks are also made at all buildings throughout the Science Park (Dreyfuss, 1992). Security procedures to enter the site consist of showing a form of identification and signing a logbook (TRCC, 1992a).

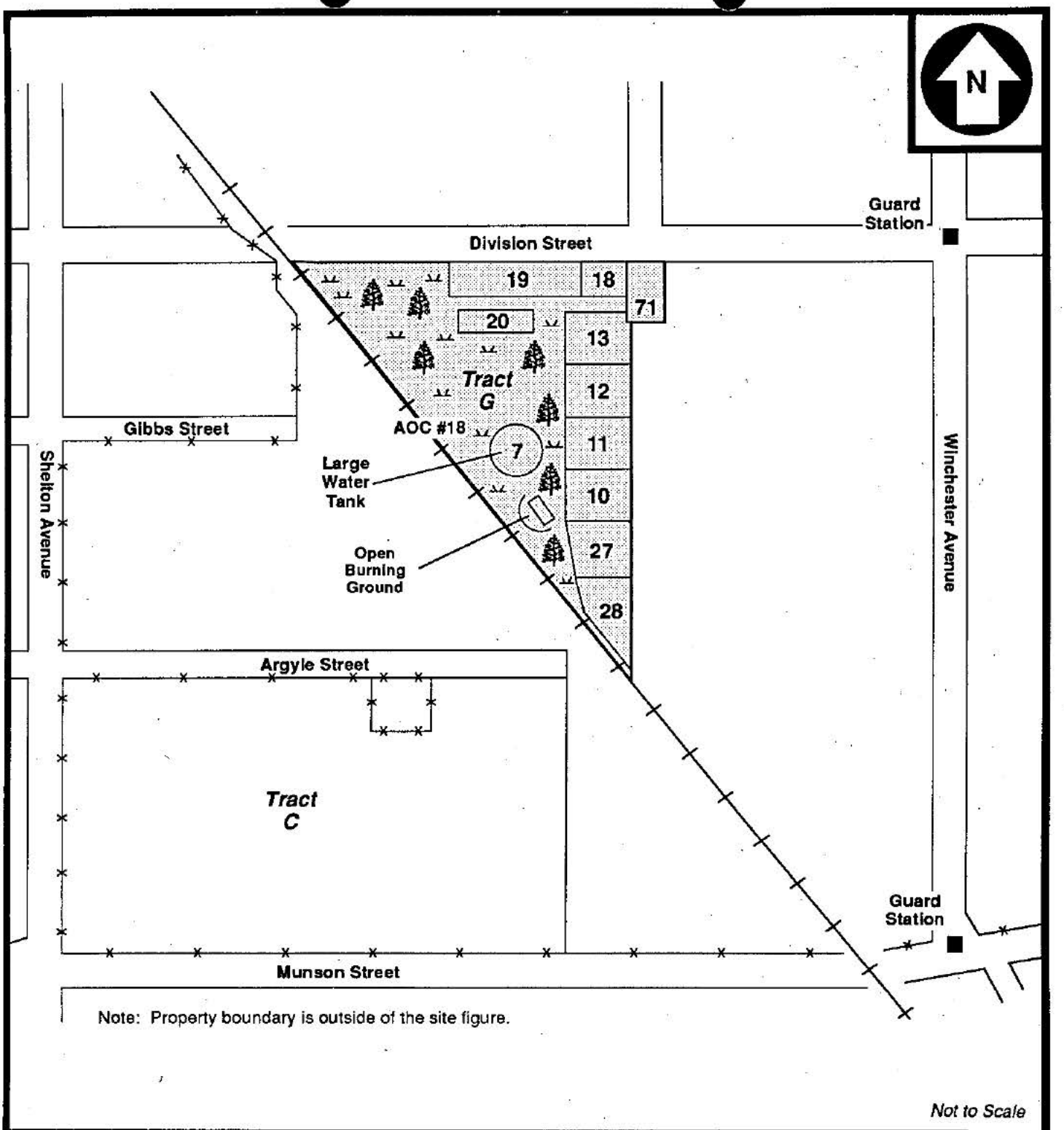
Tract G (AOC #18) is approximately 250,000 square feet. Approximately 60% of the site is occupied by a total of 10 buildings, which are abandoned and are scheduled to be demolished this year. There is also a large unused water tank and an open burning ground. Pavement was not evident. The topography is flat and the area is vegetated with trees and grass (see Figure 3). TRCC personnel conducted the site reconnaissance from behind a 10 foot high chain link fence surrounding the site. TRCC personnel did not enter the site because it was believed from file searches that the potential for exposure to remaining hazardous chemicals existed. Although the facility assured TRCC personnel the area was safe and offered to bring TRCC inside the fence, TRCC felt there was no need to go beyond the fence (TRCC, 1992a,b).

Tract G is one of five parcels Olin is donating to the Science Park. To date, the transfer of land has not been made, nor has Olin made a filing in accordance with Connecticut Transfer Bill statutes (CTDEP, 1992).

Twenty areas of concern (AOCs) were identified at Olin Corporation. The AOCs are summarized in Table 1 and presented in Figures 2 and 3. Descriptions regarding detailed RCRA-specific information for each AOC can be found in Appendix A.

SITE ACTIVITY/HISTORY

Olin is primarily a research and development facility for processes. Therefore, hundreds of processes and possibly thousands of chemicals have been used at one time or another on site. The history of past operations was provided where possible, however some of this information was unavailable to TRCC.



SITE SKETCH

OLIN CORPORATION—TRACT G
NEW HAVEN, CONNECTICUT

TRC Companies, Inc.

Figure 3.

A92765/A

TABLE 1. AREA OF CONCERN (AOC) STATUS SUMMARY				
AOC	**AOC Description**	**Startup Date/ Closure Date**	**Release Status**	**References**
#1 Waste Accumulation Satellite Stations (Building 117)	Drums are stored on the concrete floor or occasionally on a wooden pallet in approximately 4 foot by 4 foot areas designated by yellow tape on the floor. Full drums from these areas are transported to Building 121 for <90 day storage.	1991 /present	Low potential of release	TRCC, 1992a,b Dreyfuss, 1992
#2 Wastewater Treatment Building (Building 119)	This approximately 42 foot by 60 foot building provided waste treatment support for the circuit wire board operations in Building 120. The building contained 9 tanks ranging in size from 150-gallons to 6,000 gallons.	1990/1991	Low potential of release	TRCC, 1992a,b Dreyfuss, 1992
#3 Raw Material Storage (Building 121)	This is a 90 day storage area for waste and raw materials. It is approximately 42 feet by 75 feet and contains several drums, some in spill containers and others on wooden pallets as well as bags of oxidizers and containers of resins.	1982/present	Low potential of release	TRCC, 1992a,b Olin, 1992a

TABLE 1 (CONTINUED)				
AOC	**AOC Description**	**Startup Date/ Closure Date**	**Release Status**	**References**
#4 Building 120	This vacant approximately 50 foot by 120 foot building with a newly painted floor was the former printed wire board operation area. The concrete floor has trenches used to collect wastewater with grates that lead to a sump. The sump pumped wastewater outside through overhead pipes into Building 119 for treatment (see AOC #2).	1990/May 1992	High potential of release	TRCC, 1992a,b
#5 Open waste oil containers (Building 117)	Three 5-gallon containers were discovered behind a machine. The containers were used to collect waste from the machine.	1960/present	Low potential of release	TRCC, 1992a,b Zarlengo, 1992b
#6 Asbestos Covered Pipes (Building 117)	Pipes along the northern wall of Building 117 are insulated with asbestos and labeled as such.	Unknown/present	Low potential of release	TRCC, 1992a,b
#7 Drums (Building 117)	A 55-gallon drum labeled "Freon" and a 55-gallon drum labeled "polyol" were located next to a set of stairs going down to the testing area in Building 117.	Unknown/present	Low potential of release	TRCC, 1992a,b

TABLE 1 (CONTINUED)

AOC	AOC Description	Startup Date/ Closure Date	Release Status	References
#8 Drums of 1,1,1-TCE (Building 117)	Two 55-gallon drums of 1,1,1-TCE were tipped on their sides and resting on wooden supports. No secondary containment was evident.	January 1992/ present	Low potential of release	TRCC, 1992a,b Olin, 1992e
#9 Building 117	This approximately 50 foot by 215 foot building contains approximately 50 55-gallon drums of raw materials and wastes scattered throughout and approximately 75, 5-gallon containers of solvents and catalysts located on the south side. The floor is concrete. Several drains and sinks lead to the sanitary sewer.	1960/present	High potential of release	TRCC, 1992a,b Olin, 1992a
#10 Inside Testing Pools (Building 115)	Two 5,000 gallon (approximately 10 feet in diameter, 4 feet deep) swimming pools on clay material, surrounded by a steel berm are located in an approximately 30 foot by 40 foot area in building 115. Acids and hydrogen peroxide are stored in 5- and 10-gallon containers (approximately 50-gallons) and two 50-gallon plastic drums containing hydrogen peroxide near the pools.	1988/present	Low potential of release	TRCC, 1992a,b Olin, 1992a

TABLE 1 (CONTINUED)

AOC	AOC Description	Startup Date/ Closure Date	Release Status	References
#11 Former Sheet Molding Area (Building 115)	This approximately 20 foot by 50 foot area located on the eastern side of Building 115 was used for the development of sheet molding.	1980/1992	Low potential of release	Dreyfuss, 1992 TRCC, 1992a,b Olin, 1992a
#12 Boiler House	This approximately 25 foot by 60 foot building houses two boilers.	1984/present	Low potential of release	TRCC, 1992a,b Olin, 1992a
#13 Former Hazardous Waste Storage Area (Building 124)	This former hazardous waste storage area is currently going through closure under direction of the CTDEP. The approximately 40 foot by 100 foot building is currently vacant.	1981/1992	Low potential of release	Dreyfuss, 1992 TRCC, 1992a,b
#14 Empty Drum Storage Area	Approximately 230 steel and plastic drums are being stored behind Building 124 in an approximately 30 foot by 50 foot area. The drums are empty however, they were not cleaned.	1981/present	High potential of release	Dreyfuss, 1992 TRCC, 1992a,b Olin, 1992a
#15 Hazardous Chemical Storage Area (Building 123)	A approximately 10 foot by 10 foot building containing hazardous chemicals stored in the southern half and lawn maintenance supplies stored in the northern half.	1981/present	Low potential of release	Dreyfuss, 1992 TRCC, 1992a Olin, 1992a

TABLE 1 (CONTINUED)

AOC	AOC Description	Startup Date/ Closure Date	Release Status	References
#16 Underground Storage Tanks	Two 10,000-gallon tanks are used to store #4 fuel oil. No secondary containment is present.	1986/present	High potential of release	Dreyfuss, 1992 TRCC, 1992a Olin, 1992a
#17 Bag House	A baghouse on the northeast side of Building 118 collects toner fines from the processes within that building.	1990/present	Low potential of release	TRCC, 1992a,b Olin, 1992a
#18 Tract G	Tract G is the former site of a reroll mill from 1931 until 1979. In 1983 through 1985, open burning events were conducted in an area of approximately 1,000 square feet, to dispose of highly reactive materials.	1931/1979 1983/1985	High potential of release	Olin, 1992b
#19 Former Shooting Range Building	A long building which functioned as a shooting range was formerly located where the parking lot for Tract C is currently. Lead contaminated sand was produced as a result of shooting activities.	1900s/1950s	Low potential of release	Olin, 1988 TRCC, 1992a,b
#20 Bunker #11	Bunker #11 is an approximately 12 foot by 10 foot below grade structure previously used to store highly reactive materials. The Building has a wooden roof, concrete floor with a drain and cinder block walls.	1900s/1992	Low potential of release	TRCC, 1992a,b

The Tract C site has been a manufacturing site since the early 1890s when it was a part of Winchester Repeating Arms Company, who manufactured primers. There was a primer pop-off building located where buildings 122 and 123 presently stand. This area was used for the detonation of waste primer material. There was also a building which functioned as a shooting range on site. The former shooting range (AOC #19) produced lead contaminated sand as waste which was stored on a concrete pad at the end of the building. The shooting range and range sand were removed from the site sometime in the 1950s and this area now serves as the parking lot for Tract C. When the production of primers ceased in the 1950s, Tract C went through a change in manufacturing activities and became a research and development facility for Olin Corporation. The main type of research focused around flame retardants, urethane chemical manufacturing and specialty water treatment products (Olin, 1988). In 1984, a major portion of the research and development operation moved to Cheshire, Connecticut. Currently, there are three research and development operations present on site. One of these operations has been sold and will leave the site; the other two are moving to Cheshire, Connecticut by September, 1992 (Dreyfuss, 1992).

The research and development of toners used in copiers occurs in Building 118 in the east and west bays on the first floor. Electrostatic experiments produce "toner fines" which are collected through vents in the building and directed to the baghouse outside where the dust is transferred to drums and shipped off site. It is a non-hazardous toner. Newer technology for the development of toners occurs in the west bay. In 1989, asbestos was removed from Building 118. The majority of the middle bay is used for storage of raw materials and empty boxes and containers. On the second floor in the middle bay there is a lab which was used prior to 1989 (TRCC, 1992a,b).

The research and development of rigid/inflexible urethane foams used in molds for automobile dashboards occurs in Building 117. Other processes in this building include foam blending, spray painting, and testing strengths of materials. Waste generated from this building include methylene chloride, polyol, diphenyl methane 4,4-diisocyanate (MDI), toluene diisocyanate (TDI) and trichloroethylene (TCE) (Olin, 1992a).

Building 124, the former Hazardous Waste Storage Area, was built in 1981 and closed under the direction of CTDEP in 1992. Bulk drums of various wastes including acids, bases, solvents and heavy metals generated by lab processes were stored here (Olin, 1992a).

Olin currently holds a POTW Permit No. SP0001253 to discharge pool waste water to the sanitary sewer system (Olin, 1992a).

Waste accumulation satellite storage areas are designated areas for the accumulation of wastes generated by the active processes. These stations are identified with yellow tape on the floors. Any waste generated by the process is collected in the 55-gallon drums within the yellow tape. The drums are transported by a forklift to Building 121 when full. These stations are a result of a consent order given to Olin by CTDEP. The waste collection procedures have been negotiated with, and accepted by, the CTDEP (Zarlengo, 1992c).

Previously, wastes were analyzed by a "Waste Technician" who determined, in a laboratory on site, if the waste of one process was re-usable material for another process. Wastes designated as "waste" were collected in drums and brought to Building 121 for storage (Zarlengo, 1992c).

Tract G was also occupied by Winchester Repeating Arms Company and became a division of Olin Corporation in 1931. Olin/Winchester operated a brass strip reroll mill which occupied a major portion of Tract G. In 1979, operations ceased and the brass mill was relocated to East Alton, Illinois and the arms division was sold to U.S. Repeating Arms Company (USRAC). USRAC consolidated and moved operations to another tract located in Science Park (HRP, 1989). Beginning in 1983 and occurring annually through 1985, Olin contracted Environmental Enterprises Inc. (EEI) to conduct open burning events of highly reactive materials. The events occurred on Tract G behind a large unused water tank and next to a row of abandoned buildings in an area approximately 1,000 square feet in size. The purpose of these events was to dispose of highly reactive materials from Tract C thought to be too dangerous to transport offsite. The process involved moving the chemicals from their storage area on Tract C to Tract G in a specially designed van which would prevent major

damage in case of explosion. At the burn site, the materials were placed in partially buried drums, covered with a fuel oil and gasoline mixture and electrically ignited. Residue contained in the drums was disposed of at an appropriate off site facility (Olin, 1983). A list of chemicals burned at each event is provided in Appendix B.

Closure plans have been submitted to CTDEP for Tract G. The only sampling known to TRCC was conducted by HRP Associates, Inc. The results taken from the May 1992 "Draft" report, a site map and sampling locations are included in Appendix C.

At present, the primary wastes generated by Olin include toner fines, diphenyl methane 4,4-diisocyanite (MDI), toluene diisocyanite (TDI), trichloroethylene (TCE) and methylene chloride. Table 2 summarizes the primary wastes generated at Olin. The table includes wastes generated, waste sources, periods of generation, and quantities generated. Source areas are identified in Figures 2 and 3.

Olin Corporation filed a Part A Permit Application in 1980 and has been operating under "interim status" since 1980. Olin was issued a Notice of Violation (NV. No. 0080) in 1983 for violations regarding use and management of containers as well as personnel training and closure costs and estimates (CTDEP, 1983b). On November 4, 1988 Olin filed a Revised Part A Permit Application. On November 8, 1988, Olin submitted a Part B Application, but then decided to withdraw their application to store hazardous wastes on site.
As a result, Olin was requested by the CTDEP to close their container storage areas (Buildings 124 and 11) (CTDEP). Olin is currently going through closure of these areas (TRCC, 1992a,b). The closure plans detail how all remaining hazardous wastes are to be removed and how the storage areas will be cleaned, decontaminated and tested to confirm that unacceptable levels of waste constituents do not remain (CTDEP, 1988). The specific components of the container storage area closures were not obtained by TRCC.

TABLE 2. HAZARDOUS WASTE QUANTITY SUMMARY TABLE			
Substance	**Quantity**	**Years of Use/Storage**	**Source Area (AOC)**
Methylene Chloride	31 drums/year*	1960-present	Building 117
Polyol	31 drums/year*	1960-present	Building 117
Diphenyl Methane 4,4-Diisocyanate (MDI)	31 drums/year*	1960-present	Building 117
Toluene Diisocyanate (TDI)	31 drums/year*	1960-present	Building 117
Trichloro Ethane	31 drums/year*	1960-present	Building 117
Machine Flush Methylene Chloride/ Urethane Foam	unknown	1960-present	Building 117
Machine Hydraulic Oil	unknown	1960-present	Building 117
Sodium Hydroxide	unknown	1990-1991	Waste Water Treatment Building (119)
Hydrogen Chloride	unknown	1990-1991	Waste Water Treatment Building (119)
Ion Exchange Resin	unknown	1990-1991	Waste Water Treatment Building (119)
Filter Cartridges	unknown	1990-1991	Waste Water Treatment Building (119)
Acids	69 drums/year*	1990-1992	Building 120
Caustics	69 drums/year*	1990-1992	Building 120
Metal Solutions	69 drums/year*	1990-1992	Building 120
Calcium Hypochlorite (HTH)	unknown	1988-present	Inside Testing Pools (Building 115)
Trichloro Isocyanuric Acid (Pace)	unknown	1988-present	Inside Testing Pools (Building 115)
Acids	unknown	1988-present	Inside Testing Pools (Building 115)
Bases	unknown	1988-present	Inside Testing Pools (Building 115)
Pool Waste water	5,000 gallons/six months	1988-present	Inside Testing Pools (Building 115)
Uraloys	10 drums/year*	1980-1992	Sheet Molding Area (Building 115)

TABLE 2 (CONTINUED)			
Substance	**Quantity**	**Years of Use/Storage**	**Source Area (AOC)**
Fiberglass	10 drums/year*	1980-1992	Sheet Molding Area (Building 115)
Polyester Resin	10 drums/year*	1980-1992	Sheet Molding Area (Building 115)
Pigments	10 drums/year*	1980-1992	Sheet Molding Area (Building 115)
Hydrogen Peroxide	10 drums/year*	1980-1992	Sheet Molding Area (Building 115)
Caustic	unknown	1984-present	Boiler House
Polymer	unknown	1984-present	Boiler House
Sulfite	unknown	1984-present	Boiler House
Acids	unknown	1981-1991	Former Hazardous Waste Storage Area (Building 124)
Bases	unknown	1981-1991	Former Hazardous Waste Storage Area (Building 124)
Solvents	unknown	1981-1991	Former Hazardous Waste Storage Area (Building 124)
Heavy Metals	unknown	1981-1991	Former Hazardous Waste Storage Area (Building 124)
#4 Fuel Oil	unknown	1986-present	Underground Storage Tanks
Toner Fines	17 drums/year	1990-present	Bag House (outside 118)
Lead Contaminated Sand	200,000 pounds	1900s-1950s	Former Shooting Range Building

Source: Olin, 1992a

Note: Quantities for these chemicals are estimated from information supplied by the facility.

Following an inspection by a U.S. EPA representative in 1988, Olin was issued a Notice of Violation of the Land Disposal Restrictions Rule for failure to revise the existing waste analysis plan to cover land ban requirements (US EPA, 1989).

Table 3 is a time table of inspections and other regulatory activities relating to Olin Corporation.

ENVIRONMENTAL SETTING

Local overburden geology in the area of Olin is believed to be fine grained stratified drift consisting of fine to very fine sand, silt and clay (CTDEP, 1978). Bedrock beneath the area is believed to be New Haven Arkose, a red to brown, medium to coarse grained sandstone containing quartz, feldspar and rock fragments (CT Geological, 1985). Ground water flows west/southwest according to HRP's "Executive Summary Environmental Investigations" (CTDEP, 1992).

Ground water beneath the area is classified as GB. GB is defined as "ground water within highly urbanized areas of intense industrial activity and where public water supply is available since ground water may not be suitable for direct human consumption due to water discharges, spills or leaks of chemicals or land impacts" (CTDEP, 1987).

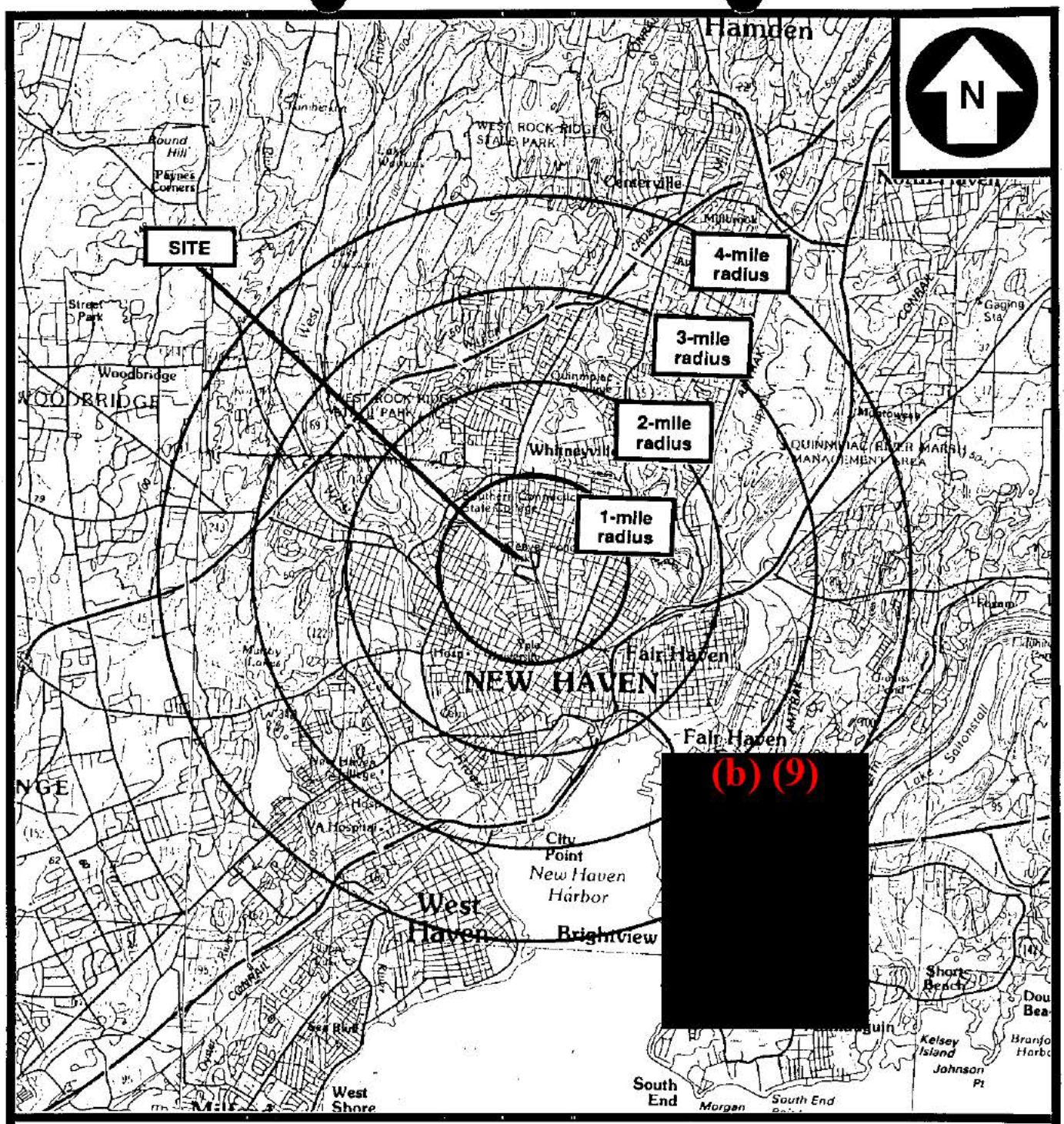
Ground water use within a four-mile radius of Olin Corporation consists of 12 private well users in New Haven and several other private well users throughout the towns of Hamden, CT, West Haven, CT, Woodbridge, CT, North Haven, CT, East Haven, CT and Orange, CT (Michalak 1992b). There are no public wells located within the four-mile radius (Michalak 1992c). Figure 4 identifies the location of the New Haven well cluster approximately 2.9 miles south to southeast of Olin Corporation (USGS, 1987). These wells provide approximately 30 residents with water. Due to the limited information available on the location of private wells throughout surrounding towns, the New Haven well cluster is considered to be the closest private wells to Olin. Public water, which is supplied to 99% of New Haven, 92% of Hamden, 98% of West Haven, 10% of Woodbridge, 88% of North

TABLE 3. REGULATORY ACTIVITIES AT OLIN CORPORATION

Date	Activity
11/18/80	WA Oppold, Senior Vice President Mfg and Eng. filed a Hazardous Waste Permit Application (Part A) for Olin (USEPA, 1980).
6/14/83	Olin is granted an Open Burning Certificate by Connecticut Department of Environmental Protection (CTDEP, 1983a).
10/28/83	Notice of Violation No. 0080 issued to Olin by CTDEP for Personnel Training, Contingency Plan, Closure/Post Closure, Closure Cost Estimates and Use and Management of Containers (CTDEP, 1983b).
3/26/84	Authorization by CTDEP for removal/disposal of asbestos from Olin Brass Group (CTDEP, 1984a).
4/6/84	Authorization by CTDEP for removal/disposal of asbestos from Olin Corp. Brass Group (CTDEP, 1984b).
7/16/84	Olin is granted an Open Burning Certificate by Connecticut Department of Environmental Protection (CTDEP, 1984c).
5/22/85	Olin is granted an Open Burning Certificate by CTDEP (CTDEP, 1985a).
7/9/85	Inspection by CTDEP, Inspector: Pete Zack; Olin currently operates a pilot plant and hazardous waste storage facility. The chemical research center was moved to Cheshire. The purpose of inspection was to assure that no waste was left on site (CTDEP, 1985b).
5/22/86	Notice of failure to submit 1985 Small Quantity Generator Annual Report issued to Olin by CTDEP (CTDEP, 1986).
3/29/88	James Dreyfuss, Facilities and Engineering Manager filed a Hazardous Waste Report for 1987 for Olin (USEPA, 1988).
11/4/88	C.G. Seefried, Director of Research at Olin filed a Revised Hazardous Waste Permit Application (Part A) (USEPA, 1988).

TABLE 3 (CONTINUED)

Date	Activity
1/9/89	Notice of Violation of the Land Disposal Restrictions Rule issued to Olin by USEPA (USEPA, 1989).
1/23-1/30/89	Inspection by CTDEP. Inspectors Hassler and Smith Processes observed during the inspection were similar to those currently in use, chemical research and development changes as needed (CTDEP, 1989).
4/15/91	Formal Notice of Withdrawal of Application for a "RCRA Part B Permit" by Olin (Olin, 1991).
9/30/91	Approval of Closure Plans by CTDEP for Hazardous Waste Container Storage area of Olin (CTDEP, 1991).



BASE MAP IS A PORTION OF THE FOLLOWING 30' x 60' U.S.G.S. QUADRANGLES:
NEW HAVEN, CT-NY, 1983; BRIDGEPORT, CT, 1986

0 5,000 10,000 15,000

scale in feet

FOUR-MILE RADIUS MAP

OLIN CORPORATION
NEW HAVEN, CONNECTICUT

TRC Companies, Inc.

Figure 4.

Haven, 95% of East Haven and 84% of Orange is supplied through surface sources only. These surface sources include Lake Gaillard, Lake Menenaktuc and Lake Hammanasset located northeast of the site and Lake Glen, Lake Dawson, Lake Watrous, Lake Bethany and Lake Chamberlain located northwest of the site. None of which are located along the surface water pathway (Michalak, 1992c). The remaining percentage of each town is assumed to be supplied by private wells, whose locations are unknown unless otherwise specified (Michalak, 1992d,e,f).

The total number of residents served by private wells within a four-mile radius of Olin Corporation is 3,489. The distribution of private wells is summarized in Table 4. The total number of residents within four miles of the site who are served by public water supplies (surface water sources) outside of four miles of Olin Corporation is 163,275 (Michalak 1992g). There are no surface water supply intakes located along the 15-mile downstream pathway from Olin Corporation (Michalak, 1992h).

Olin Corporation currently employs approximately 25 workers. No one lives on the property, however the property borders a highly urbanized area of multiple family dwellings (TRCC, 1992a,b). The closest residence to Olin Corporation is located on Munson Street just beyond the fence that surrounds Olin's property approximately 30 feet away (see Figure 2). There are no schools or daycare facilities located within 200 feet of the site. As summarized in Table 5, the total population within a four-mile radius of Olin Corporation is 166,764 persons.

The storm drainage system directs all runoff to Beaver Pond. The 15-mile downstream pathway from Olin begins where the runoff enters Beaver Pond approximately 1,000 feet from Olin Corporation. Beaver Pond discharges into an unnamed brook which flows westerly approximately 0.8 miles into Wintergreen Brook, which flows south approximately 200 feet into the West River. The West River discharges approximately 3.5 miles downstream into the New Haven Harbor and the Atlantic Ocean. The stream flow measurement for West River just below Wintergreen Brook is approximately 53 cubic feet per second (cfs) (Michalak, 1992i). The remaining 10 miles of the pathway includes beaches, state parks, and other sensitive environments. Table 6 presents wildlife occurrences/uses along the 15 mile

TABLE 4. ESTIMATED PRIVATE WELL DISTRIBUTION WITHIN A FOUR-MILE RADIUS OF OLIN CORPORATION

Distance from Facility (in miles)	Town	Private Wells	Residents Served	Total
0 - 0.25	New Haven	NA	NA	NA
0.25 - 0.50	New Haven	NA	NA	NA
0.50 - 1.0	New Haven	NA	NA	
	Hamden	*	20	20
1.0 - 2.0	New Haven	NA	NA	
	Hamden	*	344	
	West Haven	1	4	348
2.0 - 3.0	New Haven	12	30	
	Hamden	*	497	
	West Haven	24	96	
	Woodbridge	*	144	767
3.0 - 4.0	New Haven	NA	NA	
	Hamden	*	493	
	West Haven	25	100	
	Woodbridge	*	1,084	
	North Haven	*	247	
	East Haven	*	276	
	Orange	*	154	2,354
TOTAL				**3,489**

NA - Not applicable, no private wells (Michalak, 1992b)
*Number of wells unavailable; residents served based on % residents served by public water (Michalak, 1992f)
Source: Michalak, 1992g

TABLE 5. ESTIMATED RESIDENTIAL POPULATION WITHIN A FOUR-MILE RADIUS OF OLIN CORPORATION

Distance from Facility (in miles)	Town	Estimated Population	Total
0 - 0.25	New Haven	1,556	1,556
0.25 - 0.50	New Haven	3,748	3,748
0.50 - 1.0	New Haven	14,909	
	Hamden	256	15,165
1.0 - 2.0	New Haven	38,338	
	Hamden	4,307	
	West Haven	952	43,597
2.0 - 3.0	New Haven	37,499	
	Hamden	6,210	
	West Haven	10,955	
	Woodbridge	160	54,824
3.0 - 4.0	New Haven	17,377	
	Hamden	6,158	
	West Haven	14,584	
	Woodbridge	1,205	
	North Haven	2,059	
	East Haven	5,528	
	Orange	963	47,874
TOTAL			**166,764**

Source: Michalak, 1992g

TABLE 6. WILDLIFE OCCURRENCES/USES ALONG THE 15-MILE DOWNSTREAM PATHWAY FROM OLIN CORPORATION

Species	Common Name	Nature of Occurrence/Use
Invertebrates	Eastern Oyster	a,b,c
	Hard Clam	a,b,c
	Soft Shell Clam	a,b,c
Fish	Striped Bass	c,d,f,g
	Black Sea Bass	c,d,f
	Winter Flounder	a,b,c,d,f
	Bluefish	c,d,f
	Scup	c,d,f
	Tautog	f
	Atlantic Mackerel	f
Birds	Herring Gull	h (general area-may be superseded by special land use boundary)

a = spawning ground
b = nursery
c = commercial harvesting area
d = adult concentration
f = sport fishing/hunting area
g = migratory area
h = nesting area

Source: USFWG, 1980.

downstream pathway from the site (USFWS, 1980). Threatened, rare and endangered species information as well as wildlife occurrences was requested from the CTDEP Natural Resources Center for the area within a four-mile radius of the site, however, the information was unavailable for incorporation in this Final Report.

The surface waters of Beaver Pond, the unnamed brook, Wintergreen Brook, West River and New Haven Harbor downstream from Olin Corporation are classified as A, A, B/A, SC/SA to SC/SB and SD/SB, respectively, as defined by CTDEP (CTDEP, 1987). Class A waters are defined as high quality surface waters designated for use as a potential public water supply, fish and wildlife habitat, recreational use, agricultural use, and industrial supply. A B/A designation indicates that surface water quality is threatened by a source of pollution. SA waters are defined as supporting marine fish, shellfish and wildlife habitat, shellfish harvesting for direct human consumption, recreation and other activities including navigation. SC is defined as supporting certain marine fish, shellfish and wildlife habitat, recreational boating, industrial and other activities including navigation and swimming. An SC/SA designation indicates that the surface waters do not meet all SA requirements. SB is defined as supporting marine fish, shellfish and wildlife habitat, recreation, industrial and other activities including navigation. An SC/SB designation indicates that the surface waters do not meet all SB requirements. SD is defined as having present conditions which severely inhibit one or more designated uses. It may be suitable for bathing or other recreational purposes, certain fish, shellfish and wildlife habitat, industrial and other activities including navigation. As SD/SB designation indicates, surface water does not meet all SB requirements (CTDEP, 1987).

Extensive wetlands, animal habitats and fishing areas are located along the pathway. Specific wetlands along Beaver Pond and the upper one-third of West river include several palustrine ecological systems classified as open water, forested, shrub/scrub and emergent. Specific wetlands along the lower portion of West River and New Haven Harbor include several estuarine, intertidal ecological systems with areas classified as flat, emergent and beach/bar (USDI, 1974).

SUMMARY

Olin Corporation, located at 24 Science Park in New Haven, Connecticut, is a research and development facility. Olin has operated a research and development facility on the Tract C property since 1950. Prior to 1950, Winchester Repeating Arms Company manufactured primers for ammunition. The Tract G property originally occupied by Winchester Repeating Arms Company, also become a division of Olin in 1931 and was the site of a brass strip reroll mill until operations ceased in 1979. In 1983 through 1985, open burning events were conducted on Tract G to dispose of highly reactive materials.. Currently, closure plans for Tract G have been submitted to CTDEP (TRCC, 1992a,b; Olin, 1992b).

In 1985, a major portion of the research and development operations moved to Cheshire, Connecticut and operations in New Haven were scaled down considerably. At present, three research and development processes are occurring on site, one of which has already been sold. The other two processes will move to Cheshire, Connecticut. The remainder of the site is vacant or going through closure with CTDEP.

Olin currently holds a POTW permit to discharge pool wastewater to the sanitary sewer (Olin, 1992a).

Potential receptors of contamination from Olin Corporation include:

- a wetland area near Beaver Pond which is approximately 2,000 feet west of the site;
- several animal species that inhabit the area along the 15-mile downstream pathway from the site; and
- approximately 166,764 residents living within a 4-mile radius of the property.

At this time, EPA recommends that Olin Corporation be deferred to the RCRA program for further evaluation.

REFERENCES

CTDEP, 1978. Connecticut Natural Resources Atlas Series: Ground Water Availability Map. Connecticut Natural Resources Center, Connecticut Department of Environmental Protection. 1978.

CTDEP, 1983a. Connecticut Department of Environmental Protection. Open Burning Application and Certificate filed by H. A. Schroeder of Olin Corporation and granted by CTDEP. 14 June 1983.

CTDEP, 1983b. Connecticut Department of Environmental Protection Notice of Violation No. 0080 issued to Olin Corporation. 28 October 1983.

CTDEP, 1984c. Connecticut Department of Environmental Protection Open Burning Application and Certificate filed by H. A. Schroeder of Olin Corp. and granted by CTDEP. 16 July 1984.

CTDEP, 1985a. Connecticut Department of Environmental Protection Open Burning Application and Certificate filed by J. C. Vergano of Olin Corp. and granted by CTDEP. 22 May 1985.

CTDEP, 1985b. RCRA Inspection report filed by Pete Zack for an inspection at Olin Corporation. 9 July 1985.

CTDEP, 1986. Connecticut Department of Environmental Protection correspondence to Olin Corporation regarding failure to submit a 1985 Small Quantity Generator Annual Report. 2 May 1986.

CTDEP, 1987. Water Quality Classifications Map of Connecticut. Water Compliance Unit, Connecticut Department of Environmental Protection.

CTDEP, 1988. Connecticut Department of Environmental Protection. Public Notice of the intent of Olin Corporation to close storage facilities.

CTDEP, 1989a. RCRA Inspection report filed by Hassler and Smith for an inspection at Olin Corporation. 23, 30 January 1989.

CTDEP, 1989b. Connecticut Department of Environmental Protection memorandum regarding Olin Corporation, site inventory. 5 January 1989.

CTDEP, 1991. Approval of Closure Plans by CTDEP for hazardous waste container storage area of Olin Corp. 30 September 1991.

CTDEP, 1992. Connecticut Department of Environmental Protection comments on Draft Preliminary Assessment Plus of Olin Corporation. 14 August 1992.

CT Geological, 1985. Bedrock Geology map. Connecticut Geological and Natural History Survey. 1985.

Dreyfuss, 1992. Conversations with James Dreyfuss, Facilities Manager, Olin during onsite reconnaissance. 22 May 1992.

HRP, 1989. HRP Associates, Inc. Executive Summary of Olin Parcels 1-5. Science Park, New Haven, Connecticut. 6 November 1989.

Michalak, 1992a. Telephone conversation between Michele Michalak, TRCC and Henry Goetz, Chief Records, New Haven Health Department, Engineer. 3 June 1992.

Michalak, 1992b. Telephone conversation between Michele Michalak, TRCC and Paul Kowalski, New Haven Health Department. 19 May 1992.

Michalak, 1992c. Telephone conversation between Michele Michalak, TRCC and Tom Kalinowsky, South Central Connecticut Regional Water Authority. 14 May 1992.

Michalak, 1992d. Telephone conversation between Michele Michalak, TRCC and Ray Puslys, West Haven Health Department. 27 May 1992.

Michalak, 1992e. Telephone conversation between Michele Michalak, TRCC and Sandy DePuma, Orange Health Department. 28 May 1992.

Michalak, 1992f. Telephone conversation between Michele Michalak, TRCC and Tom Kalinowsky, South Central Connecticut Regional Water Authority. 28 May 1992.

Michalak, 1992g. Distance ring distribution calculations by Michele Michalak, TRCC. May 1992.

Michalak, 1992h. Telephone conversation between Michele Michalak, TRCC and Tom Kalinowsky, South Central Connecticut Regional Water Authority. 3 June 1992.

Michalak, 1992i. Telephone conversation between Michele Michalak, TRCC and Mike Cervione, USGS, Water Resources Division. 3 June 1992.

Olin, 1983. Olin Chemicals Group correspondence to Barry Giroux, Hazardous Materials Management Unit, CTDEP re: Open Burning Event, 9 June 1983.

Olin, 1988. Response by Olin Corporation pursuant to an EPA request. 4 April 1988.

Olin, 1991. Formal Notice of Withdrawal of Application for a RCRA Part B permit submitted to CTDEP by Olin Corp. 15 April 1991.

Olin, 1992a. Fax from K. Paul Short, Jr., Environmental Affairs, Olin Corporation. 26 June 1992.

Olin, 1992b. Letter and attachments from Redding Thompson of Olin Corporation to George Dews of the CTDEP. 26 March 1992.

Thompson, 1992. Conversations with Redding Thompson, Olin during on site reconnaissance. 22 May 1992.

TRCC, 1992a. Logbook of Onsite Reconnaissance of Olin Corporation. Susan Zarlengo, TRCC. 22 May 1992.

TRCC, 1992b. Notes of onsite reconnaissance of Olin Corporation. Michele Michalak, TRCC. 22 May 1992.

USDI, 1974. National Wetlands Inventory Map, New Haven Quadrangle. U.S. Department of the Interior. 1974

USFWS, 1980. Atlantic Coast Ecological Inventory Map. Hartford, CT (1:250,000 scale). U.S. Fish and Wildlife Service. 1980.

USGS, 1971. 1:24,000 Scale 7.5x15 Minute Topographic Map of Woodmont, CT Quadrangle. United States Geologic Survey. 1971.

USGS, 1984a. 1:24,000 Scale 7.5x15 Minute Topographic Map of Ansonia, CT Quadrangle. United States Geologic Survey. 1984.

USGS, 1984b. 1:24,000 Scale 7.5x15 Minute Topographic Map of Branford, CT Quadrangle. United States Geologic Survey. 1984.

USGS, 1984c. 1:24,000 Scale 7.5x15 Minute Topographic Map of Mount Carmel, CT Quadrangle. United States Geologic Survey. 1984.

USGS, 1984d. 1:24,000 Scale 7.5x15 Minute Topographic Map of New Haven, CT Quadrangle. United States Geologic Survey. 1984.

U.S. EPA, 1980. U.S. Environmental Protection Agency Hazardous Waste Permit Application Form 3510-1 and 3510-3. Filed by W. A. Oppold, Senior vice President of Manufacturing and Engineering for Olin Corporation. 18 November 1980.

U.S. EPA, 1988. U.S. Environmental Protection Agency 1987 Hazardous Waste Report (form 1C, WM part I and WM part II) filed by James Dreyfuss Facilities and Engineering Manager for Olin Corporation. 4 November 1988.

U.S. EPA, 1989. U.S. Environmental Protection Agency Notice of Violation of the Land Disposal Restrictions Rule issued Olin Corporation. 9 January 1989.

Zarlengo, 1992a. Telephone conversation between Susan Zarlengo, TRCC and Ken Roda, EPA. 1992.

Zarlengo, 1992b. File searches conducted by Susan Zarlengo, TRCC, at U.S. Environmental Protection Agency, Region I and Connecticut Department of Environmental Protection. April, May 1992.

Zarlengo, 1992c. Telecon between Susan Zarlengo, TRCC, and Paul Short, Olin Corporation. 30 July 1992.

APPENDIX A

AREAS OF CONCERN

AOC Number: 1

AOC Name: Waste Accumulation Satellite Stations (Building 117)

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: Waste Accumulation Satellite Stations (WASS) are approximately 4 foot by 4 foot areas designated on the concrete floor with yellow tape where waste drums are stored. The Waste Accumulation Satellite Stations are located near each active process and collect waste generated. These stations usually contain no more than four drums which are sometimes stored on wooden pallets. When the drums are full, they are removed and placed on a forklift and transported to the Raw Material Storage Facility (Building 121), (TRCC, 1992a; Zarlengo, 1992c).

AOC Start-up Date: November, 1991 (Zarlengo, 1992c).

AOC Closure Date: Currently in use (TRCC 1992a,b).

Waste Managed at AOC: A variety of wastes and raw materials such as TDI, MDI, methylene chloride and TCE, are stored in the Waste Accumulation areas. Any wastes used or generated during the research and development process will be collected at these stations for ultimate off-site disposal (TRCC, 1992a,b).

Release Controls: None (TRCC 1992a).

Release History: None noted in available documentation (TRCC 1992a,b; Zarlengo, 1992b).

AOC Number: 2

AOC Name: Waste Water Treatment Building (Building 119)

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: This approximately 42 foot by 60 foot building provided waste treatment support for the printed wire board operations. Located inside the building were two self-contained drains in the concrete floor, which were pumped out periodically. Nine tanks contained material for the treatment process, the material stored in each tank and the tank capacity is as follows: Influent tank - 6,000 gallons; #1 Neutralization tank - 200 gallons; chemical feed tank (acid) - 150 gallons; acid regeneration tank - 200 gallons; alkali regeneration tank - 200 gallons; decant feed and discharge tank - 440 gallons; #2 Neutralization tank - 700 gallons (TRCC, 1992a,b; Zarlengo, 1992c).

AOC Start-up Date: 1990 (Dreyfuss, 1992).

AOC Closure Date: 1991 (Dreyfuss, 1992).

Waste Managed at AOC: Materials used in the treatment process included sodium hydroxide, hydrogen chloride, ion exchange resin and filter cartridges (Olin, 1992a).

Release Controls: Two self-contained drains in the floor captured any spills (TRCC, 1992b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 3

AOC Name: Raw Material Storage (Building 121)

AOC Status: Low potential of release (TRCC, 1992a,b).

AOC Description: This building is a vented, 90-day storage area for raw materials and waste drums, with a concrete floor that slopes to the center. The building is approximately 42 feet by 75 feet. The waste drums are periodically hauled away by licensed haulers contracted by Olin. Most drums are stored on wooden pallets, while a few drums were stored on spill pallets. A yellow caution tape marks off the area along the western wall where hazardous wastes are kept. Also stored in this building are bags of oxidizers on shelves, cardboard boxes, and containers of resins. Staining on the floor was evident (TRCC, 1992b; Zarlengo, 1992c).

AOC Start-up Date: 1982 (Olin, 1992a).

AOC Closure Date: Currently in use (Dreyfuss, 1992).

Waste Managed at AOC: Oxidizers, resins, and other raw materials used in the research labs (Olin, 1992a).

Release Controls: A 3″ concrete berm surrounds building (TRCC, 1992a)

Release History: Staining on the floor was evident. There was a spill of yellow resin, approximately 2 feet in diameter, on the floor at the time of the site reconnaissance (TRCC, 1992a,b).

AOC Number: 4

AOC Name: Building 120

AOC Status: High potential of release (TRCC, 1992b).

AOC Description: This approximately 50 foot by 120 foot building was vacant and had a newly painted concrete floor. It was the former site of printed wire board operations (which had been sold). Trench lines throughout the floor lead to a common sump which pumped rinse water wastes out of the building through pipes outside above the roadway into Building 119 (waste treatment building) for treatment (TRCC, 1992b).

AOC Start-up Date: The process began in 1990 (Dreyfuss, 1992).

AOC Closure Date: 1991. However, the building became vacant in May, 1992 (Dreyfuss, 1992; Zarlengo, 1992c).

Waste Managed at AOC: Acids, caustics and metal solutions (Olin, 1992a).

Release Controls: The concrete floor had trenches sloped to a sump. Everything was clean during the site visit (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 5

AOC Name: Open Waste Oil Containers

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: Three open 5-gallon containers were discovered on the floor behind machines used to produce foam dashboards, located in building 117. Cardboard covered the floor under the containers. TRCC personnel were told the pails were put there to collect the oils when the machines were flushed out (TRCC, 1992a).

AOC Start-up Date: The pails have been used during routine maintenance since 1960 (Olin, 1992a).

AOC Closure Date: Currently in use (TRCC, 1992a,b)

Waste Managed at AOC: Machine flush methylene chloride/urethane foam, machine hydraulic oil, and raw material MDI (Olin, 1992).

Release Controls: None (TRCC, 1992a)

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 6

AOC Name: Asbestos Covered Pipes

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: The pipes along the north wall of Building 117 are insulated with asbestos and labeled as such. The asbestos was not friable; however, it appeared to have been there for a while (TRCC, 1992a,b).

AOC Start-up Date: Unknown, however, it is possible the asbestos was installed when the building was constructed, in the 1900s (TRCC, 1992a,b).

AOC Closure Date: Asbestos is still used on pipes as insulation (TRCC 1992a,b).

Waste Managed at AOC: The pipes are wrapped in asbestos (TRCC, 1992a,b).

Release Controls: The asbestos was located behind a machine but was accessible to workers (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 7

AOC Name: Drums

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: Building 117 contains two covered 55-gallon drums located on the floor next to the stairs leading down to the testing area. One drum was labeled "freon" and the other was labeled "polyol" (TRCC, 1992a,b).

AOC Start-up Date: Unknown (TRCC, 1992a,b).

AOC Closure Date: The drums were still present at the time of the site reconnaissance (TRCC, 1992a,b).

Waste Managed at AOC: One drum was labeled "freon" and the other was labeled "polyol" (TRCC, 1992a,b).

Release Controls: If a spill occurred, drum contents would be contained within the building. However, there was no secondary containment surrounding the drums to protect onsite workers (TRCC, 1992 a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 8

AOC Name: Drums of 1,1,1-Trichloroethane (TCE)

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: Two 55-gallon drums of 1,1,1-TCE were tipped on their side resting on wooden supports in the middle of Building 117. No secondary containment was present (TRCC, 1992a,b)

AOC Start-up Date: January 1992 (Olin, 1992a).

AOC Closure Date: The drums were present at the time of site reconnaissance (TRCC, 1992a,b).

Waste Managed at AOC: 1,1,1-TCE (TRCC, 1992a,b).

Release Controls: None (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 9

AOC Name: Building 117

AOC Status: High potential of release (TRCC, 1992a).

AOC Description: Approximately fifty 55-gallon drums of raw, waste and recycled materials are randomly stored inside the approximately 50 foot by 215 foot building. On the south side were approximately 50, 5-gallon containers of solvents and catalysts. The floor is concrete and has floor drains and sinks leading to the sanitary sewer system (TRCC, 1992a).

AOC Start-up Date: 1960 (Olin, 1992a).

AOC Closure Date: Currently in use (TRCC, 1992a,b).

Waste Managed at AOC: Methylene chloride, polyol, diphenyl methane 4,4-diisocyanate (MDI), toluene diisocyanate (TDI), trichloroethane (TCE) and freon (Olin, 1992a).

Release Controls: Spills could occur and be released through the sink and floor drains (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC 1992a,b; Zarlengo, 1992b).

AOC Number: 10

AOC Name: Inside testing pools (Building 115)

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: Two 5,000 gallon swimming pools are located in an approximately 30 foot by 40 foot area in the southwest part of Building 115. The pools are approximately 10 feet in diameter, and 4 feet deep. These pools are used for testing chemicals and rest on a clay material surrounded by a steel berm. Each pool is emptied via a discharge permit for 10,000 gallons per year into the sanitary sewer. The floor in this area is concrete. No floor drains were apparent. Also, stored in this area was a cabinet labeled "acid" containing approximately fifty gallons of 5 and 10 gallon containers, and two plastic containers, approximately 50 gallons each, of hydrogen peroxide. There was a wet area east of each pool which appeared to be pool water (TRCC. 1992a,b).

AOC Start-up Date: 1988 (Olin, 1992a).

AOC Closure Date: Currently in use (TRCC, 1992a,b).

Waste Managed at AOC: Pool wastewater containing calcium hypochlorite, trichloro isocyanuric acid, acids and bases. One pool is drained every six months resulting in 10,000 gallons of pool water per year. The pool water is discharged per POTW permit number SP0001253 (Olin, 1992a).

Release Controls: A steel berm, approximately 3″ high, surrounds each pool. However, this would not contain the pool water in the event of a spill (TRCC, 1992a,b).

Release History: None noted in available documentation. However, there were two wet areas located south of each pool. It was not clear where the wet area came from (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 11

AOC Name: Former Sheet Molding Area (Building 115)

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: This small area (approximately 20 feet by 50 feet) located on the eastern side of Building 115 was used for the development of sheet molding. The floor was concrete (TRCC, 1992a).

AOC Start-up Date: 1980 (Olin, 1992a).

AOC Closure Date: 1992 (Olin, 1992a).

Waste Managed at AOC: Uraloys, fiberglass, polyester resin, pigments and hydrogen peroxide (Olin, 1992a).

Release Controls: None (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 12

AOC Name: Boiler House

AOC Status: Low potential of release (TRCC, 1992a,b).

AOC Description: This approximately 24 foot by 60 foot building houses two boilers. The floor is concrete with a drain that leads to the sanitary sewer. There was also a sink which was connected to the sanitary sewer system. White stains were evident on the floor and near a 55-gallon drum in the northeast corner of the room, marked "caustic". Surrounding this drum was a 1" berm. Connected to the drum was an overflow can (TRCC, 1992a,b).

AOC Start-up Date: 1984 (Olin, 1992a).

AOC Closure Date: Currently in use (TRCC, 1992a,b).

Waste Managed at AOC: Materials used in this area include caustics, polymer (descaler) and sulfite (deoxygenator) (Olin, 1992a).

Release Controls: None (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 13

AOC Name: Former Hazardous Waste Storage Area (Building 124)

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: This former Hazardous Waste Storage Area is currently going through closure under the direction of CTDEP. Sampling has been conducted, however the results were not available for this final report. The 40 x 100 foot building is made of metal sheeting and has a concrete floor with a contained shallow trench, covered by a grate, in the middle of the floor. The building is vacant. Waste material collected in this building was removed and disposed of by a licensed hauler contracted by Olin (TRCC, 1992a,b).

AOC Start-up Date: 1981 (Dreyfuss, 1992).

AOC Closure Date: 1992 (Dreyfuss, 1992).

Waste Managed at AOC: Any waste generated by the facility including acids, bases, solvents and heavy metals (TRCC, 1992a,b; Olin, 1992a).

Release Controls: A trench was located in the middle of the concrete floor to catch any spills (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 14

AOC Name: Empty Drum Storage Area

AOC Status: High potential of release (TRCC, 1992a).

AOC Description: West of Building 124 is an approximately 30 foot by 50 foot area which contains approximately 100 steel drums stacked on their side, approximately 100 plastic drums stacked on their side, and approximately 30 steel drums standing upright on wooden pallets. These drums were all empty and in good condition, however none of them were cleaned. Information on the previous contents of the drums was unavailable. The steel drums are picked up by New England Container for reconditioning. There is a catchbasin located to the east of the area (TRCC, 1992a,b; Zarlengo, 1992c).

AOC Start-up Date: 1981 (Olin, 1992a).

AOC Closure Date: Currently in use (TRCC, 1992a,b).

Waste Managed at AOC: The area includes empty product drums and empty waste drums. Information on the specific wastes once contained in the drums was unavailable (Olin, 1992a).

Release Controls: The drums, although empty, were never cleaned. Therefore, it is possible that residue in the drums could leak out and leach into the soil (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 15

AOC Name: Hazardous Chemical Storage Area (Building 123)

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: Building 123 is an approximately 10 foot by 10 foot building divided in half. The northern portion of the building is used as a maintenance shed and storage for lawn supplies. The southern portion is where small quantities of hazardous chemicals are collected for consolidation (TRCC, 1992a; Dreyfuss, 1992).

AOC Start-up Date: 1981 (Olin, 1992a).

AOC Closure Date: Currently in use (TRCC, 1992a,b).

Waste Managed at AOC: Pesticides, herbicides (for lawn care), miscellaneous materials (TRCC, 1992a,b).

Release Controls: None (TRCC, 1992a).

Release History: None noted in available documentation (TRCC, 1992a,b).

AOC Number: 16

AOC Name: Underground Storage Tanks

AOC Status: High potential of release (TRCC, 1992a).

AOC Description: Two 10,000-gallon underground storage tanks are located about 10 feet south of Argyle Street and north of the Boiler House. The tanks are used to store #4 fuel oil. Staining was evident on the sidewalk just north of the tanks (TRCC, 1992a,b). There is no secondary containment present (Olin, 1992a).

AOC Start-up Date: 1986 (Dreyfuss, 1992).

AOC Closure Date: Currently in use (TRCC, 1992a,b)

Waste Managed at AOC: #4 fuel oil (TRCC, 1992a,b).

Release Controls: None (TRCC, 1992a).

Release History: Staining was evident on the sidewalk north of the tanks (TRCC, 1992a,b).

AOC Number: 17

AOC Name: Bag House

AOC Status: Low potential of release (TRCC, 1992a).

AOC Description: There is a bag house on the northeast side of Building 118. The bag house collects toner fines (non hazardous dust) from electrostatic experiments conducted in Building 118 (TRCC, 1992a,b; Olin, 1992a).

AOC Start-up Date: 1990 (Olin, 1992a).

AOC Closure Date: Currently in use (TRCC, 1992a,b).

Waste Managed at AOC: Toner fines collected from electrostatic experiments (Olin, 1992a).

Release Controls: None (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 18

AOC Name: Tract G

AOC Status: High potential of release (TRCC, 1992a).

AOC Description: In 1931, Winchester Repeating Arms Company became a division of Olin and operations continued in the reroll mill until 1979 when operations ceased. In 1983, 1984 and 1985, open burning events were conducted in 55-gallon drums cut in half, partially buried in the ground, to dispose of chemicals which were too reactive to transport. The former burning area is approximately 1,000 square feet (TRCCa,b; Zarlengo, 1992b).

AOC Start-up Date: 1931 (brass strip reroll mill); 1983 (burning events) (Olin, 1992b).

AOC Closure Date: 1979 (brass strip reroll mill); 1985 (burning events) (Olin, 1992b).

Waste Managed at AOC: See Appendix B for a listing of all chemicals burned on site (Olin, 1992b).

Release Controls: None (TRCC, 1992a).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 19

AOC Name: Former Shooting Range Building

AOC Status: Low potential of release (TRCC, 1992a)

AOC Description: The former shooting range building was a long building which functioned as a shooting range. The area where the building was located currently serves as the parking lot for Tract C. Lead contaminated sand was produced as a result of shooting activity and was stored at one end of the building on a concrete pad. The range and range sand were removed from the site sometime in the 1950s (Olin, 1988).

AOC Start-up Date: 1900s (Olin, 1988).

AOC Closure Date: 1950s (Olin, 1988).

Waste Managed at AOC: Lead contaminated sand, spent bullets (Olin, 1988).

Release Controls: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

AOC Number: 20

AOC Name: Bunker #11

AOC Status: Low potential of release (TRCC, 1992a,b).

AOC Description: Bunker #11 is an approximately 12 foot by 10 foot below grade structure with a 6″ concrete floor with a floor drain and 4′ high cinder block walls. The roof is wooden. The building was constructed in such a way that if the highly reactive materials stored inside exploded, the roof would blow off to minimize contamination to soil and ground water (TRCC, 1992a,b).

AOC Start-up Date: 1900s (TRCC, 1992a).

AOC Closure Date: 1992 (stopped storing reactive materials in 1988) (TRCC, 1992a,b).

Waste Managed at AOC: Highly reactive materials, see Appendix B (TRCC, 1992a,b).

Release Controls: None (TRCC, 1992a,b).

Release History: None noted in available documentation (TRCC, 1992a,b; Zarlengo, 1992b).

APPENDIX B

CHEMICALS BURNED AT TRACT G

CS-NH-0000-02089
EXHIBIT A
Addendum I

QUANTITY AND DESCRIPTION OF MATERIALS TO BE BURNED (C-NH-88)

4 OZ. & 2 X 50 GR.	PICRIC ACID
1 LB.	BENZOYL PEROXIDE
1/3 PT.	1,4 DIOXANE
½ PT.	ETHYL OXIDE
2 X 4 OZ.	DIETHYL ETHER
½ PT.	PEROXIDE ETHYL PERBENZOATE
½ PT.	BORON FLUORIDE ETHYL ETHER
1 GAL.	SEC BUTOXY POLYSILICATE W/ACETONE, TOLUENE, BUTOXY SILANOL, BENZYL CHLORIDE, ETHYLOXY SILICATES
½ LB.	RANEY NICKEL
50 GM	2-T-BUTYL AZO-2-HYDROXY-5-METHYL HEXANE
8 OZ.	BUTYL PEROCTOATE
1 OZ.	BUTYL-HYDRO BUTYL PEROXIDE
2 OZ.	BUTYL PERBENZOATE
2 X 4 OZ.	DICUMYL PEROXIDE
1 LB.	2,2'-AZOBIS (2-METHYL-PROPIONITRILE)
2 OZ.	PEROXYBENZOIC ACID
2 LB.	90% SODIUM NITRATE - 10% SODIUM NITRITE
4 X 2 OZ.	7% SODIUM NITRATE - 40% SODIUM NITRITE - 53% POTASSIUM NITRATE
10 LBS.	60% SODIUM NITRATE - 40% SODIUM NITRITE
8 OZ.	ALKALINE SODIUM NITRITE
1 LB.	SODIUM METHYLATE POWDER 98%
1 GAL.	50% DIETHYLETHER-40% TETRAHYDROFURAN-10% BENZENE
4 OZ.	60% DIPHENYL ETHER-40% P-BROMO DIPHENYL ETHER
8 OZ.	ETHYL ETHER
2 OZ.	ETHYL ETHER
1 LB.	ETHYL ETHER
1 OZ.	LITHIUM DIETHANOL AMIDE
4 OZ.	2-VINYL PYRIDINE

1 GAL.	TERT-BUTYL-PEROXY-2-ETHYL HEXANOATE, 50% WITH PHLEGMATIZER
1 GAL.	75% 1,1-T-BUTYL-PEROXY-3-3,5-TRIMETHYL CYCLOHEXANE IN DIBUTYL PHTHALATE
½ GAL.	T-BUTYL-PEROXY OCTOATE
8 OZ.	T-BUTYL PEROXIDE
10 LBS.	SODIUM METHYLATE
1 LB.	SODIUM METHYLATE
2 GAL.	HYDRAZINE
10 x 1 LB.	ETHYL OXIDE (DATED 5/76)

Cylinders containing the following materials are imbedded in cement in a 30-gallon garbage can:

1. DICARBAHEPTABORANE (7), $C_2B_5H_7$
2. MIXED CARBORANES ($C_2B_3H_5$, $C_2B_4H_6$, $C_2B_5H_7$)
3. PENTABORANE (9), B_5H_9 (2 Cylinders)
4. DIETHYL ALUMINUM ETHOXIDE, Et_2 ALOEX

Table 2

Material For Disposal Via On-Site Open Burning (9-18-84)

Material	Quantity
Magnesium Methoxide	8 oz.
Tetrabutyl Tin	4 oz.
Aluminum Iso-propoxide	2 lb.
Aluminum Iso-propoxide	2 lb.
Aluminum Iso-propoxide	2 lb.
Aluminum Iso-propoxide	8 oz.
Potassium-tert-butoxide	4 oz.
Sodium Amide	2 lb.
Magnesium (40 mesh powder)	1 oz.
Aluminum-Nickel Catalyst (powder)	1 lb.
Magnesium Metal (shavings)	1 lb.
Magnesium Metal (shavings)	1 lb.
Magnesium Metal (70-80 mesh powder)	1 lb.
Dimethyl Amine Borane	2 lb.
Dimethyl Amine Borane	5 lb.
Dimethyl Amine Borane	5 lb.
Sodium Tetrahydridoborate	4 oz.
Sodium Tetrahydridoborate	4 oz.
Olin Opex 93. Contains dinitrosopentamethylenetetramine	5 bags totaling 3 lb.
Olin Opex 93. Contains dinitrosopentamethylenetetramine	2 lb.
Olin Opex 100. Contains dinitrosopentamethylenetetramine	1 lb.
Sodium Azide	1 lb.
Benzoyl Peroxide	1 lb.
Calcium peroxide (add slowly to dilute acid-forms H_2O_2	4 oz.
m-Chloroperoxybenzoic acid	4 oz.
Calcium Peroxide	8 oz.
Boron Trifluoride/Diethyl Ether	1 qt.
Chloroperoxybenzoic Acid	1 lb.
Chloroperoxybenzoic Acid	8 oz.
Boron Trifluoride Ethyl Ether	1 qt.
Lead Peroxide (same as CaO_2)	4 oz.

Table 2 (Cont.)

Material		Quantity
Lead Peroxide		4 oz.
Isopropyl Ether		1 qt.
Barium Peroxide, Anhydrous (same as CaO_2		1 lb.
Lead Peroxide		4 oz.
Lead Peroxide		2 oz.
Raney Nickel under Ethanol		1 oz.
Phosphorus, Amorphous, Red Powder		1 lb.
Dinitrophenylhydrazine (marked Explosive)		4 oz.
Picric Acid	2 Bottles Totaling	4 oz.
Vinylmagnesium Bromide		12 oz.
Lithium Tetrahydridoaluminate (1M in THF)		1 qt.
Sodium Tetraphenylboron		4 oz.
Sodium Tetraphenylboron		1 oz.
Magnesium Ethoxide		8 oz.
Overpacked bottle (opening will identify chemical)	- will	1 qt.
Liquid in bottle (chemical symbols poorly written)	- analyze	4 oz.
White power in bottle (no label)	- to	4 oz.
White cube-shaped crystals in unmarked bottle	- identify	1 oz.
Pint can containing large chunks	-	1 lb.
Oxygen generating respirator canisters		3 ea.
Sodium Azide		1 lb.
Sodium Azide		1 lb.
Boron Trifluoride Ethyl Ether		1 pt.
Sodium Methylate		1 lb.
Sodium Methylate		8 oz.
Sodium Methylate		1 lb.
Activated Nickel Catalyst under Water		1 lb.
Raney Nickel under Mineral Oil		1 qt. can
Raney Nickel under Water		1 pt. can
Randy Nickel under Water		1 pt. can
Raney Nickel Chromium mder Water		1 qt. can
Raney Cobalt under Mineral Oil		1 qt. can
Raney Nickel Chromium under Mineral Oil		1 qt. can
Raney Nickel Chromium under Water		1 pt. can

Table 2 (Cont.)

Material		Quantity
Raney Nickel Molybdenum under Water		1 qt. bottle
Raney Nickel Molybdenum under Water		1 qt. bottle
Raney Nickel under Water		1 qt. can
Sodium Methylate		1 lb.
Methyllithium 2M in Ether		1 pt.
Phenylmagnesium bromide 3M in Diethyl Ether		2 oz.
Methyllithium-lithium bromide complex 2M in Diethyl Ether		1 qt.
Methyllithium-lithium bromide complex 2M in Diethyl Ether		1 qt.
Raney Nickel under Water		4 oz.
2,6-Dinitrochlorobenzene		10 gm.
Ammonium Nitrate		1 lb.
Dinitrotoluene		15 lb.
Dinitrophenylhydrazine 10% water added		4 oz.
Dinitrotoluene	8 Bottles Totaling	3 lb.
4,6 Dinitro-o-cresol		1 oz.
o-Dinitrobenzene		4 oz.
Dinitrophenylhydrazine 10% water added		4 oz.
Dinitrophenoxyethanol		1 oz.
2,4-Dinitrobenzaldehyde		10 gm.
1,3,5-Trichloro-2,4-dinitrobenzene		1 oz.
Dinitrobenzene		15 gm.
1,3-Dinitro-4,6-Dichlorobenzene		10 gm.
Trinitroresorcinol (high exp.)		10 gm.
Ammonium Nitrate	8 Bottles Totaling	12 lb.
Phosphonitrilic Chloride Trimer-Tetramer		5 lb.
n-Butyllithium 1.6M in Hexane		1 qt.
2,4-Bis-dimethylchlorosilyl-2,4,chloro-dicarboheptaborane-7		1 oz.
50% Sodium, 50% Paraffin		4 oz.
Sodium Peroxide	2 Bottles Totaling	600 gm.
n-Butyllithium 2.4M in Hexane		1 qt.
n-Butyllithium 2.4M in Hexane		1 qt.
70% Sodium bis(2-methoxyethoxy)-aluminum hydride in benzene		8 oz.
70% Sodium bis(2-methoxyethoxy)-aluminum hydride in benzene		250 gm.
Sodium Methylate		1 lb.

Table 2 (Cont.)

Material	Quantity
Methylmagnesium bromide 2.9M in Diethyl Ether	12 oz.
Zirconium Tetrabutoxide	10 gm.
Sodium Methylate	8 Bottles Totaling 2 lb.
Lithium Aluminum Hydride	3 Cans Totaling 30 gm.
Sodium Methylate	2 Bottles Totaling 1 lb.
Magnesium Methoxide	250 gm.
Potassium tert-butoxide	100 gm.
Chlorosulfonyl Isocyanate	100 gm.
n-Butyllithium 2.4M in Hexane	7 Bottles Totaling 6 qt.
2,4-Dinitrophenylhydrazine, dry Explosive	3 Bottles Totaling 200 gm.
Ditertiary butyl peroxide	4 oz.
75% ethyl-3,3-Bis(t-Butyl Peroxy)Butyrate in Phthalate Plasticizer	4 oz.
75% 1,1-Bis(t-Butyl Peroxy)Cyclohexane in Phthalate Plasticizer	4 oz.
Diethyl Azodicarboxylate	10 ml.
Dicumyl Peroxide	1 gal.
Tert-Butyl Hypochlorite	100 ml.
Tert-Butyl Hydroperoxide	100 ml.
Tert-Butyl Hydroperoxide	20 ml.
Organic Peroxide	2 pt.
Raney Nickel in Water	1 pt.
2-Tert-Butylazo-4-Methylpentene (LUAZO-70)	3 lb.
Tert Butyl Peroctoate	1 lb.
2-Tert-Butylazo-2-Cyanopropane (LUAZO-79)	1 lb.
Dicumyl Peroxide	100 gm.
Acetyl Peroxide, 25% solution simethyl phthalate	1 lb.
Acetyl Peroxide, 25% solution dimethyl phthalate	1 lb.
Lauroyl peroxide (Alperox F)	1 lb.
2,5-Dimethyl-2,5-Bis-(Benzoyl Peroxy)Hexane (Luperox 118)	1 lb.
Benzoyl Peroxide	1 lb.

TABLE 1

MATERIALS FOR DISPOSAL VIA ON-SITE OPEN BURNING

MAY 22, 1985

MATERIAL	QUANTITY	UNIT
THIONYL CHLORIDE	1	6 OZ
THIONYL CHLORIDE	1	1 QT
OSMIUM TRIOXIDE (1% SOLUTION IN H_2O)	1	2 OZ
SODIUM-PARAFFIN DISPERSION 50%-50%	1	4 OZ
CESIUM METAL	9	1 GM
OPEX 100 (DINITROSOPENTAMETHYLENETETRAMINE) FLAMMABLE SOLID	1	2 LBS
HYDRAZINE SULFATE	1	4 OZ
METHYL HYDRAZINE	1	4 OZ
DINITRO PENYL HYDRAZINE	5 vials	2 GM
PYRIDINE SULPHUR TRIOXIDE	1	1 QT
PYRIDINE SULPHUR TRIOXIDE	1	2 OZ
56%-HYDROXY ETHYL HYDRAZINE-6% PYRIDIZINE MIXTURE	1	4 OZ
BENZOYL CHLORIDE	2	1 PT
PHENOXY THIOPHOSPHORYL DICHLORIDE	1	2 OZ
DIETHYL ETHER	2	1 PT
BIS(2-METHOXYETHYL) ETHER 99%	2	1 PT
2-BROMOETHYL ETHYL ETHER	2	4 OZ
BENZOYL PEROXIDE	1	2 OZ
1,4-DIOXANE	1	1 PT
p-DIOXANE	1	1 QT
TRIMETHYL BORATE	1	1 PT
ACYL CHLORIDES 6-DIAZO 5-OXO-5,6-DIHYDRO-1-NAPHTHALENE SULFONYL CHLORIDE MIXTURE	10	10 GM
DIETHYL ETHER	1	1 GAL
METHYL PHOSPHONIC DICHLORIDE-PYRIDINE-THIONYL CHLORIDE MIXTURE	1	1 GAL
3-FLUORO-PHENYL ISOCYANATE	3	25 GM
3-FLUORO-PHENYL ISOCYANATE	1	5 GM
4-FLUORO-PHENYL ISOCYANATE	6	10 GM
ALPHA-TRIFLUORO-O-TOLYL ISOCYANATE	1	25 GM

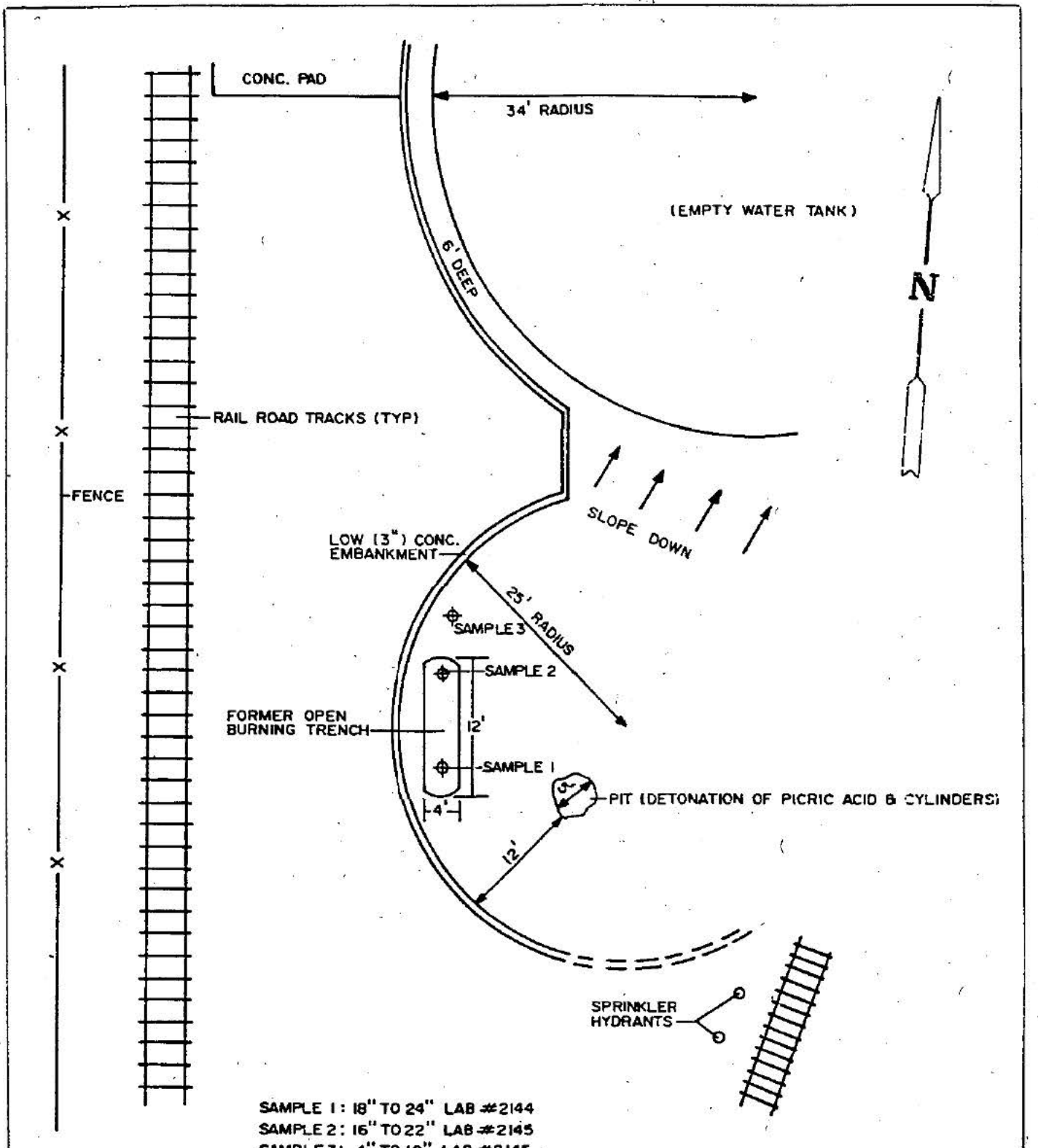
TABLE 1 (continued)
MATERIALS FOR DISPOSAL VIA ON-SITE OPEN BURNING
MAY 22, 1985

MATERIAL	QUANTITY	UNIT
DIETHYL ETHER SOLUTION	1	1 GAL
50% DIETHYL ETHER-10% ETHANOL-10% BENZENE-30% TETRAHYDROFURAN	1	1 GAL
DICYCLO HEXYL AMINE NITRITE	1	8 OZ
PHENYL ETHER	1	1 GAL
TETRAHYDROFURAN	1	1 GAL
DILUTE SOLUTION OF SODIUM NITRITE AND SODIUM AZIDE	5 vials	1 OZ
SODIUM PEROXIDE	1	8 OZ
LEAD PEROXIDE	9	1 LB
SODIUM AZIDE	1	4 OZ
PICRIC ACID	1	1 LB
HEXAMETHYL DIISOCYANATE	1	4 OZ
ADHESIVE ACCELERATOR CONTAINING ORGANIC PEROXIDE	1	8 OZ
PHOSPHORUS PENTASULFIDE IN ACETONE	1	2 GM
PHOSPHORUS PENTASULFIDE IN ACETONE	1	1 OZ
BORON	1	1 OZ
SODIUM METHYLATE	1	1 LB
DINITROSOPENTAMETHYLENETETRAMINE	7 vials	3 OZ

APPENDIX C

SAMPLING RESULTS FOR TRACT G

From May 92 Draft F+G Report



SAMPLE 1: 18" TO 24" LAB #2144
SAMPLE 2: 16" TO 22" LAB #2145
SAMPLE 3: 4" TO 10" LAB #2145

HRP ASSOCIATES, INC.

Client : HRP Associates, Inc.
Lab No.: 32-061-6
PO No. : OLI0050.RC
Rep. Date: 3/12/92 Date Samples Rec'd: 3/4/92

RESULTS OF ANALYSIS

Matrix Type	Soil	Soil	Soil	
CTL Sample #	2144	2145	2146	
Field ID	So. End	No. End	No. of Trench	
MASS ANALYSIS				
Barium-ppm	27.9	29.9	24.0	
Lead-ppm	22.5	23.6	20.2	
Selenium-ppm	ND<0.1	ND<0.1	ND<0.1	
Chromium, Total-ppm	4.3	4.3	6.4	
Cyanide, Total-ppm	ND<1.0	ND<1.0	ND<1.0	
Zinc-ppm	33.2	32.2	30.8	
Nickel-ppm	5.4	6.4	5.3	
Tin-ppm	ND<20	ND<20	ND<20	

Matrix Type	Water	Water	Water	
CTL Sample #	2147	2148	2149	
Field ID	~~Tank~~ Trip Blank	Field Blank	Equipment Blank	
Barium-mg/l	ND<0.5	ND<0.5	ND<0.5	
Lead-mg/l	ND<0.05	ND<0.05	ND<0.05	
Selenium-mg/l	ND<0.01	ND<0.01	ND<0.01	
Chromium, Total-mg/l	ND<0.05	ND<0.05	ND<0.05	
Cyanide, Total-mg/l	ND<0.05	ND<0.05	ND<0.05	
Zinc-mg/l	ND<0.05	ND<0.05	ND<0.05	
Nickel/mg/l	ND<0.05	ND<0.05	ND<0.05	
Tin-mg/l	ND<2	ND<2	ND<2	

Matrix Types : W = Water/Aqueous
S = Soil/Solid
O = Oil/Hydrocarbons

CONNECTICUT TESTING LABORATORIES, INC.
165 Gracey Avenue / Meriden, CT 06450
(203)-634-3731
Connecticut Certification No. PH-0547

Client : HRP Associates Inc.
Lab No.: 32-166-3
PO No. : OLI0011.RC
Rep. Date: 3-18-92 Date Samples Rec'd: 3-4-92

RESULTS OF ANALYSIS

TCLP EPA 1311

Matrix Type CTL Sample #	S 2144	S 2145	S 2146	
Field ID	South End	North End	N. of Trench	
Arsenic-mg/L	ND<0.05	ND<0.05	ND<0.05	
Barium-mg/L	ND<0.5	ND<0.5	ND<0.5	
Cadmium-mg/L	ND<0.01	ND<0.01	ND<0.01	
Chromium, Total-mg/L	ND<0.05	ND<0.05	ND<0.05	
Lead-mg/L	0.08	0.10	0.20	
Mercury-mg/L	ND<0.002	ND<0.002	ND<0.002	
Selenium-mg/L	ND<0.01	ND<0.01	ND<0.01	
Silver-mg/L	ND<0.01	ND<0.01	ND<0.01	
Nickel-mg/L	ND<0.05	ND<0.05	ND<0.05	
Zinc-mg/L	0.10	0.05	0.10	

Matrix Types : W = Water/Aqueous
S = Soil/Solid
O = Oil/Hydrocarbons

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Dong Pelham	From Helen Swogger
Co. HRP	Co. CTL
Dept. OLI0011-RC	Phone #
Fax # 32-166-3	Fax # 3-18-92

CONNECTICUT TESTING LABORATORIES, INC.
165 Gracey Avenue / Meriden, CT 06450
(203)-634-3731
Connecticut Certification No. PH-0547